

PRELIMINARY ENGINEERING REPORT

WATER FACILITY

I. GENERAL. A Preliminary Engineering Report should clearly describe the owner's present situation, analyze alternatives, and propose a specific course of action, from an engineering perspective. The level of effort required to prepare the report and the depth of analysis within the report are proportional to the size and complexity of the proposed project. Rural Utilities Service projects must be modest in design, size and cost, and be constructed and operated in an environmentally responsible manner. The following should be used as a guide for the preparation of Preliminary Engineering Reports for RUS financed water systems.

II. PROJECT PLANNING AREA. Describe the area under consideration. The project planning area may be larger than the service area determined to be economically feasible. The description should include information on the following:

A. Location. Maps, photographs, and sketches. These materials should indicate legal and natural boundaries, major obstacles, elevations, etc.

B. Environmental Resources Present. Maps, photographs, studies and narrative. These materials should provide information on the location and significance of important land resources (farmland, rangeland, forestland, wetlands and 100/500 year floodplains, including stream crossings), historic sites, endangered species/critical habitats, etc., that must be considered in project planning.

C. Growth Areas and Population Trends. Specific areas of concentrated growth should be identified. Population projections for the project planning area and concentrated growth areas should be provided for the project design period. These projections should be based on historical records with justification from recognized sources.

III. EXISTING FACILITIES. Describe the existing facilities including at least the following information:

A. Location Map. Provide a schematic layout and general service area map (may be identified on project planning area maps).

B. History.

C. Condition of Facilities. Describe present condition; suitability for continued use; adequacy of water supply; and, if any existing central facilities, the treatment, storage, and distribution capabilities. Also, describe compliance with Safe Drinking Water Act and applicable State requirements.

D. Financial Status of any Operating Central Facilities. Provide information regarding rate schedules, annual operating and maintenance (o&m) cost, tabulation of users by monthly usage categories and revenue received for last three fiscal years. Give status of existing debts and required reserve accounts.

IV. NEED FOR PROJECT. Describe the needs in the following order of priority:

A. Health and Safety. Describe concerns and include relevant regulations and correspondence from/to Federal, and State regulatory agencies.

B. System O&M. Describe the concerns and indicate those with the greatest impact. Investigate water loss, management adequacy, inefficient designs, and problem elimination prior to adding additional capacity.

C. Growth. Describe the reasonable growth capacity that is necessary to meet needs during the planning period. Facilities proposed to be constructed to meet future growth needs should generally be supported by additional revenues. Consideration should be given to designing for phased capacity increases. Provide number of new customers committed to this project.

V. ALTERNATIVES CONSIDERED. This section should contain a description of the reasonable alternatives that were considered in planning a solution to meet the identified need. The description should include the following information on each alternative:

A. Description. Describe the facilities associated with the alternative. Describe all feasible water supply sources and provide comparison of such sources. Also, describe treatment, storage and distribution facilities.

B. Design Criteria. State the design parameters used for evaluation purposes. These parameters must follow the criteria established in RUS Instruction 1780.

C. Map. Schematic layout.

D. Environmental Impacts. Do not duplicate the information in the applicant's submittal of environmental information. Describe unique direct and indirect impacts on floodplains, wetlands, other important land resources, endangered species, historical and archaeological properties, etc., as they relate to a specific alternative. RUS must conduct an environmental assessment prior to project approval.

E. Land Requirements. Identify sites and easements required. Further specify whether these properties are currently owned, to be acquired or leased.

F. Construction Problems. Discuss concerns such as subsurface rock, high water table, limited access, or other conditions which may affect cost of construction or operation of facility.

G. Cost Estimates.

1. Construction.
2. Non-Construction and Other Projects.
3. Annual Operation and Maintenance.
4. Present Worth, based on Federal discount rates.

H. Advantages/Disadvantages. Describe the specific alternative's ability to meet the owner's needs within its financial and operational resources, comply with regulatory requirements, compatibility with existing comprehensive area-wide development plans, and satisfy public and environmental concerns. A matrix rating system could be useful in displaying the information.

VI. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE). This section should contain a fully developed description of the proposed project based on the preliminary description under the evaluation of alternatives. At least the following information should be included:

A. Project Design.

1. Water Supply. Include requirements for quality and quantity. Describe recommended source, including site.
2. Treatment. Describe process in detail and identify location of plant and site of any process discharges.
3. Storage. Identify size, type and site location.
4. Pumping Stations. Identify size, type, site location and any special power requirements.
5. Distribution Layout. Identify general location of line improvements: lengths, sizes and key components.
6. Hydraulic Calculations. This information should provide sufficient detail in a tabular format to determine compliance with RUS design requirements. Automation tools may be used by the engineer. The submittal should include a map with a list of nodes and pipes and the associated characteristics, such as elevation of node, pipe diameter, pipe segment length, reservoir elevation, domestic and industrial water demands, fire flow, etc.

B. Cost Estimate. Provide an itemized estimate of the project cost based on the anticipated period of construction. Include development and construction, land and rights, legal, engineering, interest, equipment, contingencies, refinancing, and other costs associated with the proposed project. (For projects containing both water and waste disposal systems, provide a separate cost estimate for each system.)

C. Annual Operating Budget.

1. Income. Provide a rate schedule. Project income realistically, based on user billings, water treatment contracts, and other sources of incomes. In the absence of other reliable information, for budget purposes, base water use on 60 gallons per capita per day, or 150 gallons per residential-sized connection per day, or 4,500 gallons per residential-sized connection per month. When large agricultural or commercial users are projected, the report should include facts to substantiate such projections and evaluate the impact of such users on the economic viability of the project. The number of users should be based on equivalent dwelling units, which is the level of service provided to a typical rural residential dwelling.

2. Operations and Maintenance Costs. Project costs realistically. In the absence of other reliable data, base on actual costs of other existing facilities of similar size and complexity. Include facts in the report to substantiate operation and maintenance cost estimates. Include salaries, wages, taxes, accounting and auditing fees, legal fees, interest, utilities, gasoline, oil and fuel, insurance, repairs and maintenance, supplies, chemicals, office supplies and printing, and miscellaneous.

3. Capital Improvements. If purchasing water or if water is being treated by other, these costs should be included in o&m costs.

4. Debt repayments. Describe existing and proposed project financing from all sources. All estimates of RUS funding should be based on loans, not grants. RUS will evaluate the proposed project for the possible inclusion of RUS grant funds.

5. Reserve. Unless otherwise required by State statute establish at one-tenth (1/10) of annual debt repayment requirement.

VII. CONCLUSIONS AND RECOMMENDATIONS. Provide any additional findings and recommendations that should be considered in development of the project. This may include recommendations for special studies, highlight the need for special coordination, a recommended plan of action to expedite project development, etc.